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Descripteur(s): *Français (Langue) *Langue seconde *Classe d'immersion *Evaluation de l'apprentissage *Evaluation de programmes *Primaire (Niveau) *Secondaire (Niveau)

Le but de cette étude est d'évaluer l'habileté linguistique en français des élèves de neuvième année issus de trois programmes d'immersion française: 1. immersion primaire, 2. immersion de septième année; 3. immersion de septième et huitième années. Des groupes témoins anglais et français ont été inclus pour fin de comparaison.

La compétence linguistique en français a été évaluée en administrant les tests suivants: un test de lecture close, un test de compréhension de l'écrit, un test de compréhension auditive et un test de production orale. Au total, 176 élèves de neuvième année, y compris les groupes de contrôle, ont participé au processus d'évaluation qui a eu lieu en avril et mai 1979. Tous provenaient d'écoles de la région de Montréal.

Les élèves des trois groupes d'immersion ont obtenu de meilleurs résultats que ceux du groupe de contrôle anglais. Les résultats au test de lecture close du groupe d'immersion des septième et huitième années sont supérieurs à ceux du groupe d'immersion primaire. Les élèves du groupe d'immersion primaire et ceux du groupe d'immersion des septième et huitième années ont obtenu de meilleurs résultats que ceux du groupe d'immersion de septième année au test de lecture close et au test de compréhension auditive. Autrement, il n'y a pas de différence significative entre les trois groupes d'immersion.

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A Comparison of Three Alternative French Immersion Programs at the Grade 9 Level.

E. Adiv

C. Morcos

E D U Q 8270272

A COMPARISON OF THREE ALTERNATIVE FRENCH IMMERSION PROGRAMS AT THE GRADE 9 LEVEL

E. Adiv and C. Morcos

Instructional Services Department
The Protestant School Board of Greater Montreal

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A Comparison of Three Alternative French Immersion Programs at the Grade 9 Level

Ellen Adiv and Chaker Morcos

Protestant School Board of Greater Montreal

The purpose of this study was to assess the linguistic proficiency in French of grade 9 students attending three different French immersion programs: Early Immersion, Grade 7 Immersion (1 year) and Grade 7-8 Immersion (2 years). English and French control groups were included for comparison purposes.

French linguistic proficiency was measured by the following test battery: a cloze reading test, written and oral comprehension tests, and an oral production test. It was concluded that: 1) the students of the three immersion programs scored significantly higher than the English control group, 2) the Grade 7/8 Immersion group scored significantly higher than the Early Immersion group on the cloze reading test; otherwise, there were no significant differences between these two groups, 3) the Early Immersion and the Grade 7/8 Immersion groups scored significantly higher than the Grade 7 Immersion group on the cloze reading test and on the oral comprehension test. Otherwise, there were no significant differences between these three groups.

The comparison between the present evaluation and last year's grade 9 evaluation indicates that the results are generally comparable with the exception of one test where this year's Grade 7/8 Immersion scored significantly higher than the Early Immersion group. Possible reasons for this difference are discussed in the last section of the report.

Evaluation comparative de trois programmes alternatifs d'immersion française

9ème Année

Ellen Adiv et Chaker Morcos

Bureau des écoles protestantes
du grand Montréal

RESUME

Le but de ces travaux de recherche a été d'évaluer l'habilité linguistique en français des élèves de 9ème année de trois divers programmes d'immersion française: classes d'immersion primaire, cours d'immersion de 7ème année (1 an) et cours d'immersion des 7ème et 8ème années (2 ans). Les élèves des groupes anglais et français de contrôle ont aussi été inclus dans cette évaluation pour fins de comparaison.

L'habileté linguistique en français a été évaluée en administrant les tests suivants: test de lecture cloze, compréhension de l'écrit, compréhension auditive et production orale. On est arrivé à la conclusion que: 1) Les élèves des trois groupes d'immersion ont obtenu de meilleurs résultats que ceux du groupe de contrôle anglais. 2) Les résultats du test de lecture cloze du groupe d'immersion des 7ème et 8ème années étaient supérieurs à ceux du groupe d'immersion primaire. Autrement, il n'y avait pas de différence significative entre ces deux groupes. 3) Les élèves du groupe

d'immersion primaire et ceux du groupe d'immersion des 7ème et 8ème années ont obtenu de meilleurs résultats que ceux du groupe d'immersion de 7ème année au test de lecture cloze et au test de compréhension auditive. Autrement, il n'y avait pas de différence significative entre ces deux groupes.

La comparaison entre l'évaluation de cette année et celle de l'année passée, toujours au niveau de la 9ème année, montre que les résultats sont généralement comparables, sauf pour un test de cette année, où le groupe des 7ème et 8ème années a obtenu de meilleurs résultats que le groupe d'immersion primaire. Les facteurs qui pourraient causer cette différence sont exposés dans ce rapport.

The present report describes the results of a comparative evaluation of the French immersion programs presently offered by the P.S.B.G.M.: early immersion, grade 7 immersion and grade 7/8 immersion. The evaluation was carried out at the grade 9 level, i.e., after the grade 7/8 immersion students had attended the follow-up program for one year.

Other comparative evaluations of these three French immersion programs were carried out in previous years, with students in grades 7 and 8 of each program (Genesee & Leblanc, Note 1) and with students in grades 8 and 9 of each program (Genesee & Morcos, Note 2). In each of these studies the higher grade (grade 8 in the case of the first study and grade 9 in the case of the second study) represents the pilot group of the grade 7/8 immersion program which was inaugurated in September 1976. The lower grade in each study (grade 7 in the case of the first study and grade 8 in the case of the second study) represents the follow-up classes. The most noteworthy findings that emerged from these evaluations were that:

1) At the end of grade 8 there were no significant differences between the Early Immersion and the two-year Grade 7/8 Immersion groups and both groups scored significantly higher than the one-year Grade 7 Immersion group on several of the tests.
2) At the end of grade 9 there were, again, no significant differences between the Early Immersion and the two-year Grade 7/8 Immersion groups except on the test de compréhension auditive, on which the Early Immersion group scored higher than the Grade 7/8 Immersion group. The one-year Grade 7 Immersion students again tended to score lower than the Early Immersion and the two-year Grade 7/8 Immersion students on most tests. There were, however, fewer significant differences between the Grade 7 Immersion

group and the other two immersion groups than there had been at the end of grade 8.

On the basis of these findings, it was implied that the follow-up programs may be insufficient to maintain the level of linguistic proficiency which students had demonstrated in French immediately after participating in an immersion program. It was furthermore suggested that follow-up programs be examined with a view to increasing their effectiveness.

It should be noted that, firstly, the grade 7/8 students in the pilot group (now in grade 10) came from a school located in a neighbourhood with a large French population; secondly, grade 10 students from the early immersion program attend the same language arts classes as grade 11 students from the one-year grade 7 immersion program. Since these factors may affect the performance of the grade 10 students in these two programs, it was decided to analyze the results of the grade 10 evaluation separately and not to compare the grade 9 and grade 10 test results. Hence this report describes the results of the grade 9 evaluation. The purpose of the present study was to replicate last year's evaluation, reducing as much as possible non-program related factors which might influence the students' proficiency in French. English and French control groups were included in the study. As in the previous two studies, only French language skills were examined.

THE PROGRAMS

Schematic representations of the programs of each immersion group are presented in Figure 1 in terms of percentage of school time during which French and English are used as the media of curriculum instruction.

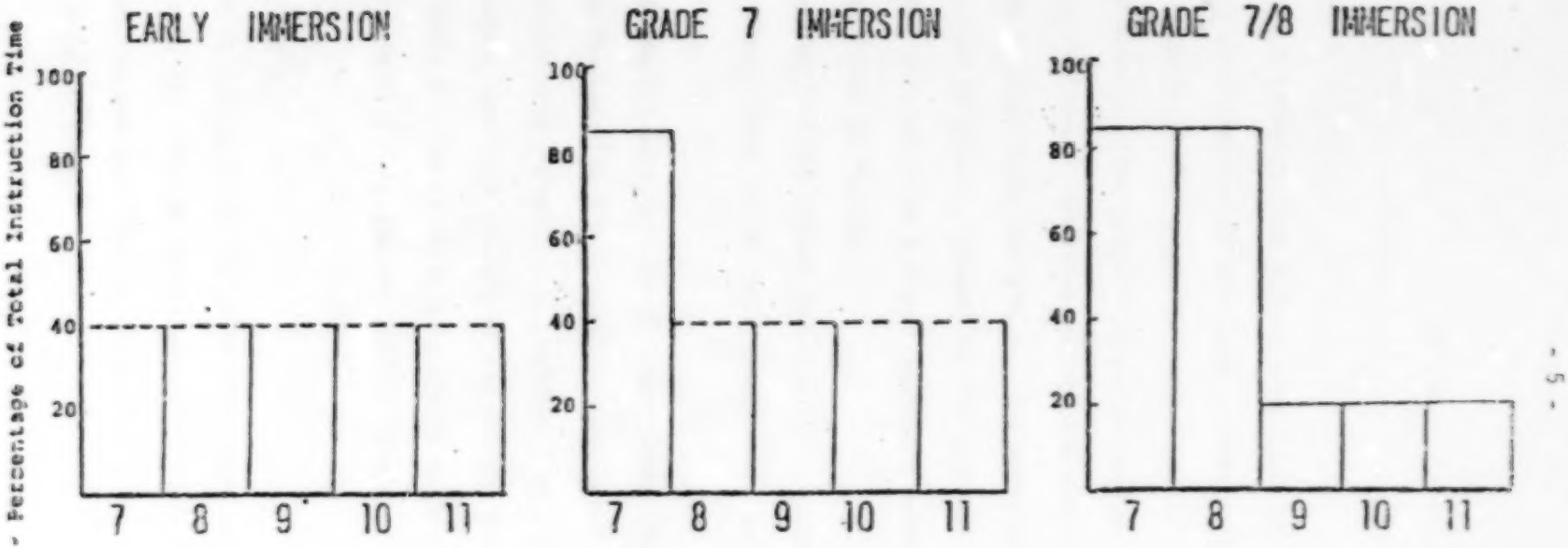
EARLY IMMERSION
GRADE 7 IMMERSION
GRADE 7/8 IMMERSION
Percentage of Total Instruction Time
100
80
60
40
20
7
8
9
10
11

FIGURE 1

METHOD

The Samples

Grade 9 students from each of five types of language programs were selected for participation in the study. These were: 1) early immersion, 2) grade 7 immersion, 3) grade 7/8 immersion, 4) French control, and 5) English control. The grade 7 immersion samples were made up of students who had been in grade 7 immersion centres and wing schools; no distinction will be made between these two groups. The decision to combine these two groups was made in order to streamline the testing. The French control students were selected from a French secondary school in la Commission des écoles catholiques de Montréal.

A summary of the actual sample sizes is presented in Table 1A, and a list of schools from which these samples were selected is presented in Table 1B.

The samples were made up of intact French language classes which were selected on the basis of I.Q. scores (Henmon Nelson Test of Mental Ability). All I.Q. scores were current, i.e., derived from I.Q. testing during the 1978-79 academic year. A summary of the average group I.Q. scores is presented in Table 2. The range of I.Q. scores is also presented in order to indicate the variation in student ability levels.

The test battery

The following French language tests were administered: (1) Test de lecture cloze, (2) Test de compréhension de l'écrit, (3) Test de compréhension auditive and (4) Test de production orale. Each test will be described briefly below.

(1) Test de lecture cloze

The cloze test is a test well suited to measure integrative skills in second language achievement (Oller, 1973). It consists of a passage from which every nth word has been deleted. The student must complete the passage by supplying replacements for the deleted words. The deleted words include various parts of speech and the learner has, therefore, to use grammatical as well as context clues in order to supply the mi -ing items. In the present test, the students were asked to read a 265 word passage entitled "Capitale mondiale de l'orchidée." In order to introduce the student to the story, the opening sentence of the passage was left intact and every seventh word thereafter was deleted. A total of 30 words was deleted (see appendix A).

The tests were scored in two different ways: exact word replacements and contextually acceptable replacements.

In order to analyze the students' responses in greater detail, incorrect replacements were classified according to four error types: lexical errors, grammatical errors, spelling errors and omission errors.

Lexical errors included all responses which consisted of a word other than the deleted word.

Grammatical errors included all errors related to the inflection of grammatically variable words, e.g., "les *jeune filles" for "les jeunes filles;" "beaucoup de pépinières *est *ouverts" for "beaucoup de pépinières sont ouvertes."

Spelling errors included all errors in the invariant part of the word, e.g., "les *pasagers" for "les passagers;" "*orchidé" for "orchidée."

Omission errors referred to all instances of failure to insert a word in the given blank space.

It should be noted that the scores for both exact and acceptable responses are positive scores, whereas the scores obtained from the analysis of incorrect responses are negative scores.

(2) Test de compréhension de l'écrit

This test was developed by the research department of the P.S.B.G.M. for the present evaluation. It consisted of eight separate items: six newspaper articles, a short anecdote and a poem. The newspaper articles dealt with a variety of topics such as news items, a volcanic eruption, travel in the Amazon and an article on cars and fuel consumption. Each item was followed by a number of multiple-choice questions, 20 in total. The students' scores consisted of their total number of correct responses.

(3) Test de compréhension auditive

This test was similarly developed by the research department of the P.S.B.G.M. for the present evaluation. It consisted of three newspaper articles, a dialogue and a weather report adapted from a radio broadcast and two short stories taken from a French high school reader. Each excerpt was followed by one, two or three multiple-choice questions, 18 in total. Both the excerpts and the questions were tape recorded and presented orally only. The student's score consisted of his or her total number of correct responses.

(4) Test de production orale

A sub-sample of students from each language group were interviewed individually by one of two French-speaking interviewers. A summary of the sample sizes is presented in Table 3.

The interviewer first asked each student a few questions related to his family, his holiday plans, his hobbies, etc., and continued with a short

five-minute discussion on a topic of interest to the student. All interviews were tape recorded for later analysis.

Each student's speech sample was later evaluated by two raters, working independently, on five different dimensions: comprehension, pronunciation, grammar, vocabulary and communication. The communication dimension was intended to assess the student's willingness to speak French and his or her fluency while doing so. The ratings ranged from a maximum of 5, indicating excellent or native-like skill, to a minimum of 1, indicating very poor skill. The raters were native French-speaking Canadians. They were not trained in linguistics. It was felt desirable to employ untrained native French speakers since in most day-to-day situations, second language speakers are evaluated by untrained people. The raters were trained to use the rating system. The evaluations of both raters were combined to form an average score for each dimension.

Testing procedures

All testing was carried out in April and May of 1979. The group-administered tests were given by a bilingual tester during French class time. The results of students with French-speaking parents were excluded from the data analysis of the anglophone samples. Similarly, students with French-speaking parents were excluded from the samples selected for the test de production orale.

RESULTS

The students' scores on the Henmon-Nelson Tests of Mental Ability were analyzed first, using an analysis of variance procedure (least squares solution). The main variable was school group: Early Immersion, Grade 7 Immersion, Grade 7/8 Immersion and English control. The results of this analysis revealed that there were statistically significant differences among the groups (Table 2). Since these differences could influence the results on the French language tests, confounding the influence of French language programs, all French language test scores were analyzed using a covariance procedure (see appendix B for a brief explanation of analysis of covariance). In all analyses, the main variable was school group, as above. Since no I.Q. scores were available for the French control students, it was not possible to include their test results in the analyses. Nevertheless, their average score on each test has been included in Table 4 along with the results of the anglophone students for informal comparison. As well, the results for students in the Lasalle High School 7/8 Immersion program have been excluded from the statistical analyses but have been summarized in Table 4, again for informal comparisons. The results of each test will now be discussed briefly.

(1) Test de lecture cloze

The comparison among the four anglophone groups on the acceptable replacement scores shows that the English controls ($\bar{X}$ = 4.77) scored significantly lower than the three immersion groups. Among the three immersion groups, the Grade 7/8 Immersion students ($\bar{X}$ = 16.14) scored significantly higher than the Early Immersion students ($\bar{X}$ = 14.50), who,

in turn, scored significantly higher than the Grade 7 Immersion students ($\bar{X}$ = 12.23). The informal comparison with the French controls shows that the latter scored markedly higher than all the anglophone groups. With regard to the exact replacements, the English controls ($\bar{X}$ = 3.84) again scored significantly lower than the three immersion groups. Similarly, the Grade 7/8 Immersion students ($\bar{X}$ = 12.62) scored significantly higher than the Early Immersion students ($\bar{X}$ = 10.32) and the Grade 7 Immersion students ($\bar{X}$ = 9.42). There was no significant difference between the Early Immersion group and the Grade 7 Immersion group. The French controls again scored numerically higher ($\bar{X}$ = 16.24) than all the anglophone groups. There were no significant differences among the groups on three of the four types of errors (lexical, grammatical and spelling). There were, however, significant differences among all the groups with respect to omission errors. The Early Immersion group produced fewest omission errors ($\bar{X}$ = 2.82) and the English control group produced the highest number of omission errors ($\bar{X}$ = 10.89). It is of interest to note that the Grade 7 Immersion group produced fewer omission errors ($\bar{X}$ = 4.37) than the Grade 7/8 Immersion group ($\bar{X}$ = 6.74). It is also noteworthy that the number of omission errors produced by the Early Immersion group was almost as low as that of the French control group ($\bar{X}$ = 1.28). The finding of significant differences in omission errors among the different groups and the absence of any such differences on other types of errors suggests that the students may be using a strategy of avoidance, i.e., the replacement of blanks tends to be avoided when the learner is not sure of the item to be filled in.

In summary, there were significant differences among all the groups on the exact and acceptable replacement scores of the cloze test. The rank order from most correct to fewest correct responses was (1) Grade 7/8 Immersion, (2) Early Immersion, (3) Grade 7 Immersion and (4) English controls.

(2) Test de compréhension de l'écrit

The English control group ($\bar{X}$ = 12.00) scored significantly lower on this test than all three immersion groups; there were no other significant differences. The informal comparison between all the immersion groups and the French controls shows that the Grade 7/8 Immersion group scored higher ($\bar{X}$ = 16.90) than the French control group ($\bar{X}$ = 15.89) and both the Early Immersion group ($\bar{X}$ = 14.64) and the Grade 7 Immersion group ($\bar{X}$ = 14.81) scored only slightly lower than the French control group.

(3) Test de compréhension auditive

The English control students scored significantly lower than all three immersion groups. The Grade 7 Immersion students ($\bar{X}$ = 9.48) scored significantly lower than the Early Immersion ($\bar{X}$ = 11.92) and the Grade 7/8 Immersion ($\bar{X}$ = 12.32) students. There was no difference in performance between the Early Immersion and Grade 7/8 Immersion groups. The French control group ($\bar{X}$ = 13.04) scored numerically higher than all the anglophone groups.

(4) Test de production orale

On all five scales of this test, the English control students were rated significantly lower than the three immersion groups. There were, however, no significant differences among the three immersion groups on any of these scales. The Early Immersion group was rated numerically closest to the French control group on four of the five scales (comprehension, pronunciation, grammar and communication).

Lasalle Grade 7/8 Immersion test results

The Lasalle High School test results were not included in the statistical analyses but are presented in Table 4 for numerical comparisons. It will be recalled that the Lasalle 7/8 immersion program is a reduced version of the regular grade 7/8 immersion progra offered in other schools in that 66% of the grade 7 and 8 curricula is taught in French in contrast to 83% in other schools.

The comparison between the Lasalle test results and those of the regular Grade 7/8 Immersion group at the grade 9 level indicates that the Lasalle students scored markedly lower than the Grade 7/8 Immersion students on all the measures of French language proficiency. This is true when the Lasalle results are compared with the adjusted Grade 7/8 results (Table 4), as well as when they are compared with the raw, unadjusted Grade 7/8 results, which are not presented here. The Lasalle students also produced more lexical and more grammatical errors on the test de lecture cloze than the Grade 7/8 Immersion students. They did, however, produce fewer spelling errors and fewer omission errors on that test than the Grade 7/8 Immersion group. It is of interest to note that on the test de lecture cloze, acceptable and exact replacements, as well as on the test de compréhension de l'écrit and the test de compréhension auditive, the Lasalle students also scored numerically lower than the Grade 7 Immersion group. Only on the five measures of the oral production test were the Lasalle scores close to those of the Grade 7/8 Immersion group; it should, however, be noted that there were no significant differences among any of the three immersion groups on these five measures.

SUMMARY AND DISCUSSION

The results of the tests administered in this study indicate that:

(1) The English control group scored significantly lower than the three immersion groups on all major measures of French proficiency: test de lecture cloze (acceptable and exact replacements), test de compréhension de l'écrit, test de compréhension auditive and test de production orale.

(2) There were no significant differences between the three immersion groups on the test de compréhension de l'écrit or on the five scales of the test de production orale.

(3) The Early Immersion and the Grade 7/8 Immersion groups scored significantly higher than the Grade 7 Immersion group on the test de lecture cloze (acceptable replacements) and on the test de compréhension auditive.

(4) The Grade 7/8 Immersion group scored significantly higher than the Early Immersion group on the test de lecture cloze (exact and acceptable replacements).

(5) There were no significant differences between the four anglophone groups on the measures pertaining to specific error types on the cloze test except for the number of omission errors. This measure of proficiency was the only one where the Early Immersion group scored significantly higher than the Grade 7/8 Immersion group.

(6) The informal comparison with the French control group shows that the latter scored numerically higher on all measures of proficiency than the four anglophone groups except in the case of the test de compréhension de l'écrit, on which the Grade 7/8 Immersion students scored higher than the French controls.

(7) The Lasalle students scored consistently lower than the regular Grade 7/8 Immersion group.

An informal comparison of the results of this year's evaluation with those of the last year's grade 9 evaluation (Genesee and Morcos, Note 2) shows that: (1) On the test de compréhension auditive there is practically no difference between the performance of this year's Early Immersion, Grade 7 Immersion and Grade 7/8 Immersion groups and that of the corresponding groups in last year's evaluation. (2) On several measures of last year's test de production orale, the Grade 7/8 Immersion group, but not the Early Immersion group, scored significantly higher than the Grade 7 Immersion group. There were no significant differences between the three groups in this year's test de production orale. (3) This year's evaluation shows that on the test de lecture cloze, the Grade 7/8 Immersion group scored significantly higher than the Early Immersion group while no significant differences between these two groups were found in last year's evaluation.

Particularly noteworthy is the finding that, on two related measures of the test de lecture cloze, the Grade 7/8 Immersion students scored significantly higher than the Early Immersion students. While the results of one test may not be indicative of a consistent superior level of proficiency, they nevertheless underline the importance of the question as to why the performance of the Early Immersion group, which has had much more extensive exposure to French, is not superior to that of the Grade 7/8 Immersion group. A tendency of the Grade 7/8 Immersion group to score higher than the Early Immersion group was already noted in last year's results of the test de production orale. Therefore, it seems of interest to look at some factors which might affect the performance of each of these groups.

Firstly, since no significant differences between the two groups were found at the end of grade 8 in two separate evaluations one should compare the follow-up programs at the grade 9 level. Closer examination of these programs shows that the Grade 7/8 Immersion students take only one French course a day (Language Arts) whereas the Early Immersion students take two courses in French (Language Arts and one other subject). Thus, time of instruction cannot be an influencing factor in the superior performance of the Grade 7/8 Immersion students. Furthermore, the Language Arts courses offered in the Early Immersion and Grade 7/8 Immersion programs are basically the same. Hence, the difference between the two groups cannot be attributed to differences in the content of those courses. One is therefore led to conclude that the differences in performance may be attributable to the immersion experience itself. Here, one of the most noteworthy differences between the programs is the grade level at which the intensive exposure to the second language occurs. Several factors related to this difference between the two programs may provide a possible explanation for the superior level of proficiency demonstrated by the Grade 7/8 Immersion students.

The Grade 7/8 Immersion students may be benefiting from a recency effect, i.e., the more recent the intensive learning experience, the less time one has to forget the newly acquired skills. This factor may be particularly relevant in view of certain weaknesses in the follow-up programs with regard to the promotion of adequate language growth (Genesee and Leblanc, Note 1; Genesee and Morcos, Note 2). In a related vein, the follow-up program may be more motivating for the Grade 7/8 Immersion students, who probably view this program as a direct continuation of their immersion experience whereas for the Early Immersion students the follow-up program

in grade 9 is far removed from their actual immersion experience and hence may have lost its motivational impact. Finally, for the Grade 7/8 Immersion students, the intensive exposure to French came at a time when they were cognitively more mature. There is some evidence in the literature that older students may have more efficient learning strategies than younger learners with respect to the acquisition of both comprehension (Asher and Price, 1967) and production skills - mainly in the areas of syntax and morphology, where the learning of abstract grammatical rules is involved - (Fathman, 1975). Hence, the Grade 7/8 Immersion students may be benefiting from a more recently acquired linguistic base.

While the above discussion seems to point to certain advantages to be gained from participating in the Grade 7/8 Immersion program, the importance of early immersion programs in the present linguistic reality of the province of Quebec cannot be ignored. It would, however, seem that if students attending early immersion programs are to maximally develop their linguistic competence in French, the follow-up programs must be designed so as to meet the particular needs of these students. It should also be noted that the term "follow-up program" is usually limited to high school programs. Closer examination of the early immersion program at the elementary school level reveals, however, that in grades 4, 5 and 6 the instructional time in French is reduced to 40% of the total instruction time, which is approximately the same amount of time as that offered in the early immersion follow-up program in high school. It may be that the early immersion program at these grade levels also needs to be carefully examined in order to assess its effectiveness.

We shall continue to evaluate and compare these two groups of immersion students in order to try to determine more specifically the particular areas of linguistic proficiency on which these two groups may differ from one another.

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Table 1

(A) Sample Sizes

Early Immersion	27
Grade 7 Immersion	46
Grade 7/8 Immersion	43 (38)[a]
English Control	31
French Control	29
	116

(B) The Schools

Early Immersion	Grade 7 Immersion	Grade 7/8 Immersion	English Control	French Control
Westmount	Westmount	Rosemount	Westhill	Sainte-
	Riverdale	S.W.C.H.S.	Riverdale	Croix
		Lasalle		

[a] Lasalle Sample Sizes

Table 2

Summary of IQ Results

	Mean	Range
Early Immersion	114.70	96-136
Grade 7 Immersion	115.37	85-138
Grade 7/8 Immersion	115.81	90-150
Lasalle	111.70	86-136
English Control	100.26	59-130

F ratio: 13,289***

df: 3,143

*** $p < .001$

Table 3

Sample sizes of the test de production orale

Early Immersion	22
Grade 7 Immersion	33
Grade 7/8 Immersion	24 (29)[a]
English Control	24
French Control	10

[a] Lasalle Sample Sizes

Table 4

Summary of test results[a]

(1) Test de lecture cloze (30)[b]

	Early Immersion	Grade 7 Immersion	Grade 7/8 Immersion	English Control	French Control[c]	F Ratio
Total correct						
acceptable	14.50	12.23	16.14 (10.80)[d]	4.77	22.97	54.63***
exact	10.32	9.42	12.62 (9.15)	3.84	16.24	39.54***
Lexical errors	15.03	14.73	13.15 (16.33)	14.33	11.72	0.837
Grammatical errors	1.14	0.98	0.90 (0.94)	0.60	0.72	1.275
Spelling errors	0.64	0.55	0.60 (0.36)	0.27	0.04	0.795
Omissions	2.82	4.37	6.74 (4.75)	10.89	1.28	12.28***

df = 3,124

*** $p < .001$

[a]Mean scores joined by a line differ significantly from one another according to the Newman-Keuls Test of Multiple Comparison procedure.

[b]Maximum possible test scores are indicated in parentheses.

[c]French Control test results were not included in the statistical analyses.

[d]Lasalle High School test results. These results are not included in the statistical analysis.

Table 4 (cont'd)

Summary of test results

Test de compréhension de l'écrit (20)

Early Immersion	Grade 7 Immersion	Grade 7/8 Immersion	English Control	French Control	F ratio
14.64	14.81	16.90 (13.95)	12.00	15.89	20.151***

Test de compréhension auditive (18)

Early Immersion	Grade 7 Immersion	Grade 7/8 Immersion	English Control	French Control	F ratio
11.92	9.48	12.32 (8.76)	7.60	13.04	16.135***

df = 3,116

*** $p < .001$

Table 4 (cont'd)

Summary of test results

Test de production orale (5)

	Early Immersion	Grade 7 Immersion	Grade 7/8 Immersion	English Control	French Control	F ratio
comprehension	4.68	4.35	4.61 (4.31)	3.09	5.00	21.49***
pronunciation	4.03	3.82	3.99 (3.97)	2.68	5.00	18,694***
grammar	4.00	3.67	3.86 (3.79)	2.39	4.90	28.745***
vocabulary	3.64	3.50	3.78 (3.47)	2.10	5.00	30.718***
communication	4.03	3.70	3.84 (3.46)	2.58	4.95	20.901***

df: 3.98

*** $p < .001$

TEST DE LECTURE CLOZE

Capitale mondiale de l'orchidée

La capitale de l'île Hawaii, la plus grande de l'archipel hawaiien, se vante d'être la capitale mondiale de l'orchidée et le visiteur commence à en être conscient dès son arrivée à l'île. En descendant de l'avion les passagers sont accueillis avec des "leis" d'orchidées et certains hôtels offrent aux clients des bouquets de corsage de cette fleur.

Certaines orchidées poussent à l'état sauvage dans l'île, mais les horticulteurs en produisent plus de vingt mille variétés. Certaines sont blanches et plates, et les jeunes filles les portent dans leurs cheveux, comme des diadèmes veloutés, d'autres ressemblent à des papillons exotiques.

Cependant, les leis vendus dans l'île ne sont pas tous faits d'orchidées. Plusieurs sont faits d'une fleur qui s'appelle frangipani dans les autres pays du monde. Il y a à Hawaii une fleur appelée anthurium, qui semble artificielle et faite de cire. On peut apercevoir ces fleurs qui poussent en groupe sous les arbres.

Pourtant, ce n'est ni l'orchidée, ni l'anthurium, qui sont l'emblème floral officiel de l'île. Cet honneur revient à une fleur aux pétales de couleur rouge doré appelée le lehua. Le lehua pousse sur un arbre dont les graines furent apportées à Hawaii par les explorateurs polynésiens, il y a des siècles, parce que le bois résistant de cet arbre leur était utile.

Beaucoup de pépinières et de jardins sont ouverts au public. Les pépinières en particulier sont aménagées avec une minutie toute orientale et comportent des sentiers, des ponts et des étangs de nénuphars.

Appendix B

EXPLANATION OF ANALYSIS OF COVARIANCE

Analysis of covariance is a statistical procedure which is similar to the analysis of variance in that it is used to compare the results of two or more groups on a particular test. At the same time, analysis of covariance mathematically reduces the influence that another variable, such as I.Q., might have on the test results. For example, if two hypothetical language groups under investigation differ *a priori* in terms of I.Q., and if it is believed that I.Q., will significantly influence performance on the test being administered (e.g., a reading test), then an analysis of covariance will estimate the significance of the language factor. This mathematical procedure is used when it is difficult or impossible to select groups which are equivalent in I.Q..